# Residential Remedial Action Completion Report, West McComas Street Site, Baltimore, Maryland

Prepared for

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February 2009

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R 37793—4.15

# Executive Summary

This remedial action completion report documents the response activities completed at seven properties located between 201 and 213 McComas Street, Baltimore, MD. Work was undertaken pursuant to a letter prepared by the Maryland Department of the Environment (MDE) which directed Honeywell International Inc. to conduct remedial activities within the backyards of three townhouse residences at 201, 207 and 209 West McComas Street, based upon the results of soil sampling conducted by MDE in May 2007. The work at the site was performed pursuant to a work plan submitted to MDE in June 2007. Access agreements from the property owners were eventually secured in November 2008. The remedial action activities were completed in February 2009.

The primary objectives of the residential remedial action were the following:

- Remove arsenic-impacted soil from the backyards of the seven residential properties to a minimum depth of 3 inches below the existing concrete patios (and sub-base); and
- Restore those portions of the residential properties impacted during the remedial action to a condition similar to that before the start of the remedial action.

Major work elements that were completed to meet the above remedial objectives include the following:

- Obtaining access agreements from the owners of the seven residences;
- Obtaining permits from the City of Baltimore, including a right-of-way permit for use of the alley south of the properties and a building permit for each of the seven residential properties;
- Completing project documentation including site-specific HASP;
- Performing a pre-construction survey with the property owners, including completing a pre-construction property survey checklist, taking inventory of personal materials in each backyard, and photographing the existing site conditions;
- Performing a baseline survey (to document the seven parcels' existing site boundaries) and pre- and post-excavation surveys using a licensed surveyor;
- Deploying two air-monitoring stations, one to the northwest and the other to the east of the seven residential properties, and collecting air-monitoring data from them for the duration of construction activities;
- Performing utility clearance prior to mobilization;
- Implementing vermin control, which involved setting 10 rat bait traps on the south side of the seven residential properties ;

- Mobilizing construction equipment and materials and temporary storage containers for property owners' and residents' belongings that were removed from the backyards of each property;
- Obtaining approval from the City of Baltimore and MDE to stage equipment and containers on the nearby Race Street site throughout the duration of the project;
- Performing site preparation activities, including removing trees, shrubs, vegetation, fencing, and encumbrances within the backyards of all seven properties;
- Installing stormwater run-on/run-off controls to prevent stormwater from flowing into the work area or from the work area to storm sewers, street gutters, streets, sidewalks, and driveways;
- Demolishing the existing fencing and concrete patios and removing patio sub-base material and soil to a minimum depth of 3 inches from the backyard of each townhouse property while maintaining dust control and monitoring;
- Performing waste characterization of removed materials and coordinating the offsite transport and disposal of the non-hazardous materials;
- Importing certified clean structural fill material to provide a stable sub-base for the installation of the new concrete patios;
- Installing new four-inch thick reinforced concrete patios with curbs, replacement steps at three properties, and new fencing at the perimeter and common fences between the properties;
- Completing minor patching repairs to the concrete stairs and front sidewalks along the north side of the seven properties;
- Performing verification topographic surveys following the excavation of the soil and the installation of new certified clean sub-base material and performing the final survey upon completion of the concrete patios;
- Inspecting the equipment staging area at the Race Street site and patching the asphalt cover (as required) following equipment demobilization;
- Returning personal property to the owners and completing post-construction surveys with the property owners; and
- Completing post-remediation surveys and inspections to ensure that the work had been performed to the project specifications and met the expectations of the property owners and tenants.

Based upon the documentation presented in this report, Honeywell has completed all of the requirements of the MDE directive.

# Contents



**Tables**

**Figures**



**Attachments (on CD)**

SECTION 1

# Introduction

This Remedial Action Completion Report (RACR) documents the response activities completed at seven properties located between 201 and 213 McComas Street, Baltimore, MD. Work was undertaken pursuant to a letter prepared by the Maryland Department of the Environment (MDE) which directed Honeywell International, Inc. to conduct remedial activities within the backyards of three townhouse residences at 201, 207 and 209 West McComas Street, based upon the results of soil sampling conducted by MDE in May 2007 (Attachment A), and work was also performed within the backyards of the four other townhouse properties. The work at the site was performed pursuant to a work plan submitted to MDE in June 2007. Access agreements from the property owners were eventually secured in November 2008. The remedial action activities were completed in February 2009.

## 1.1 Site Description

The site encompasses seven residential townhouse properties, each having a backyard approximately 35 feet long and 15 feet wide. Prior to the renovation work, most of the ground surface in the backyards was covered with concrete patios, with small areas having isolated patches of grass and vegetative matter. The property boundaries of the backyards were determined by a survey performed in August 2008 as illustrated in Figure 1-2.

Immediately adjacent properties include the following:

- The Schuster Concrete facility, which bounds the residential properties to the west, south, and east-southeast;
- Swann Park, an approximately 11-acre recreational facility that is owned by the City of Baltimore, which is located immediately west of Schuster Concrete and the West McComas Street residential properties ; and
- A canine boarding facility and veterinary clinic, which is at 200 West McComas Street, directly north of and across the street from the seven townhouse properties.

## 1.2 Remedial Objectives

The primary objectives of the residential remedial action were the following:

- Remove arsenic-impacted soil from the backyards of the seven residential properties to a minimum depth of 3 inches below the existing concrete patios (and sub-base); and
- Restore those portions of the residential properties impacted during the remedial action to a condition similar to that before the start of the remedial action.

Section 4 describes the work completed; photographs documenting the work are provided in Attachment B.

## 1.3 Project Organization

The work was performed pursuant to a work plan that was provided to the MDE prior to implementation of remedial activities at the site. Representatives of Honeywell provided oversight throughout the design and construction activities to ensure compliance with MDE's remedial action directive requirements. CH2M HILL prepared the design specifications, obtained the required permits from the City of Baltimore and agreements to gain access to the residential properties, and provided construction oversight during the implementation of all phases of construction work. ATC was the prime subcontractor to CH2M HILL for retaining specialty contractors, as required, to perform the construction activities.

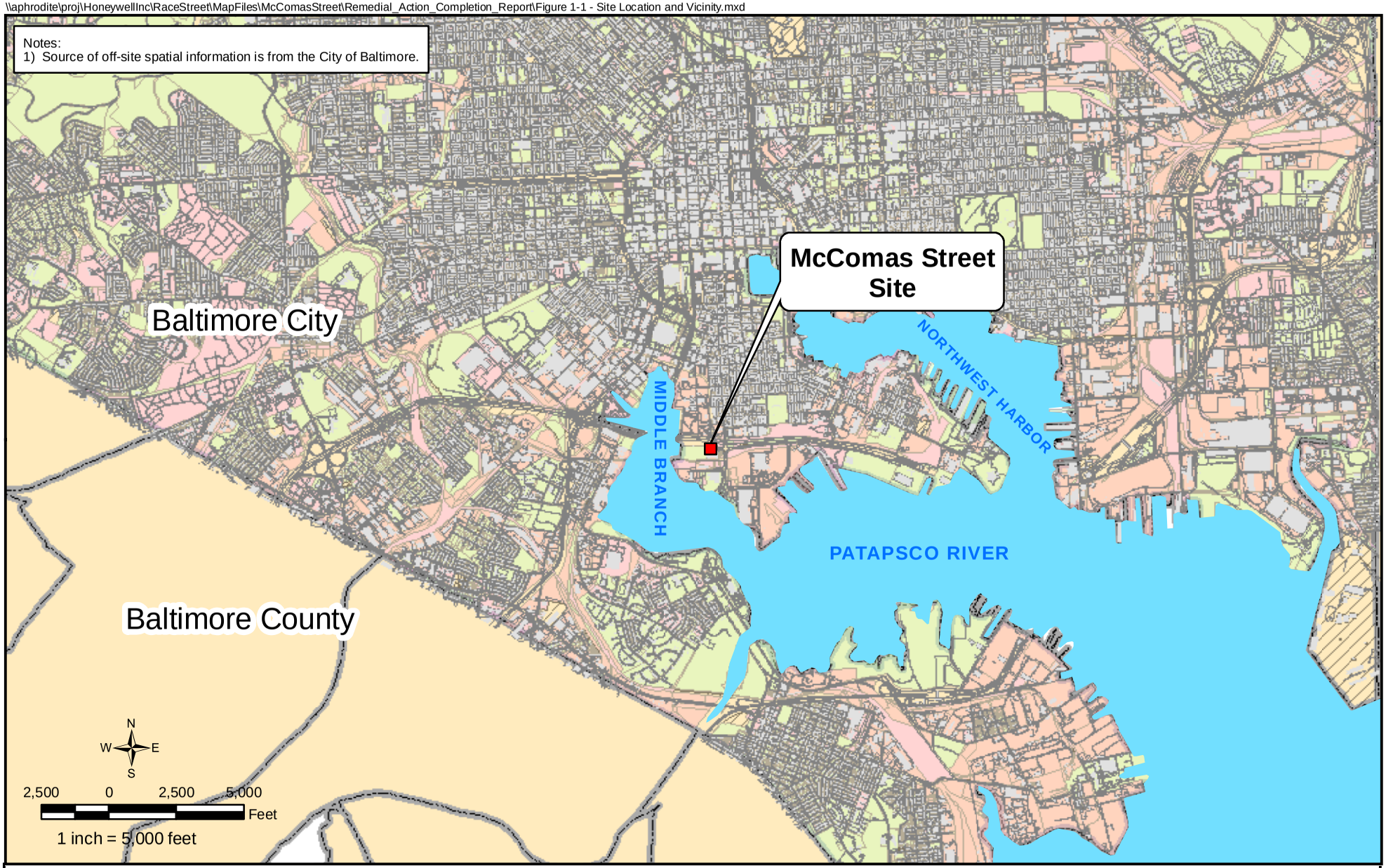
## 1.4 Report Organization

This report documents that the required remedial actions were completed in accordance with MDE's June 2007 directive.

Section 2 outlines major project milestones. Section 3 provides an overview of the health and safety measures undertaken pursuant to the project-specific health and safety plan (HASP). Section 4 details the remedial measures undertaken at the site.

Attachments to this report include information collected during remedial construction activities that documents and certifies the completion of the remedial actions, including the excavation, transportation, and disposal of contaminated soil, photographic documentation, the baseline and final as-built survey results, and other supporting documentation.

\\aphrodite\proj\HoneywellInc\RaceStreet\MapFiles\McComasStreet\Remedial_Action_Completion_Report\Figure 1-1 - Site Location and Vicinity.mxd




**Legend**

- McComas Street Site
- Edge of Pavement
- Stream/River
- Buildings

**Land Use**

- Unknown
- Commercial
- Recreation
- Industrial

**Figure 1-1**
Site Location Map
Residential Remedial Action Completion Report
McComas Street Site
Baltimore, Maryland

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\\aphrodite\proj\HoneywellInc\RaceStreet\MapFiles\McComas_Street\Figure 1-2 - Pre-Construction Site Survey - Expanded.mxd

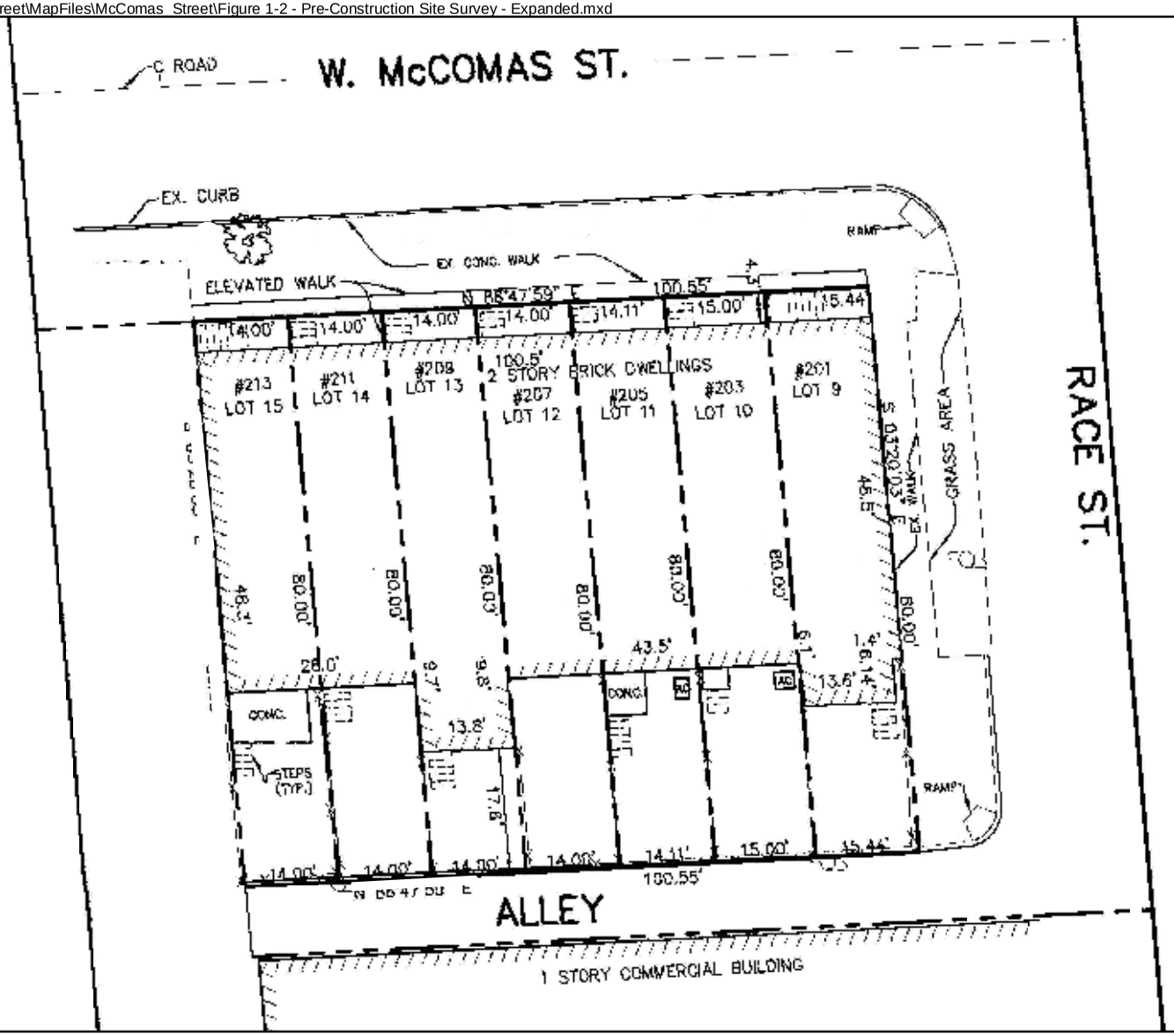


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Figure 1-2
Pre-Construction Site Survey
McComas Street Site
Baltimore, Maryland

CH2MHILL

Figure developed from CAD from Patton Harris Rust and Associates

SECTION 2

# Project Milestones

Significant project activities, milestones, and events are listed in Table 2-1. Specific details describing the corrective measures are presented in Section 4. The project was divided into several phases: pre-construction activities, such as mobilization; demolition and excavation and offsite transportation, and disposal of excavated soil, concrete patios, and sub-base materials; placement of clean soil and sub-base, and pouring of concrete patios; fence installation; and general site cleanup and demobilization.

Site photographs recording the progress of remedial activities are provided in Attachment B.

TABLE 2-1
Project Milestones

| Milestone | Start Date | Completion Date |
|---|---|---|
| ***Project Planning Activities*** | | |
| Submitted Work Plan to MDE | — | 7-2-07 |
| Signed access agreements obtained from residents | 7-07 | 7-28-08 |
| Pre-construction site inspection and surveys | 7-29-08 | 7-31-08 |
| Baseline topographic site survey | 7-31-08 | 8-12-08 |
| Pre-design site visit | 8-5-08 | 8-5-08 |
| Preparation of project plans and specifications | 8-5-08 | 9-3-08 |
| Building permit obtained from City of Baltimore, Department of Housing and Community Development, Division of Construction and Building Inspection | 10-17-08 | 10-23-08 |
| Alley access permit obtained from City of Baltimore, Department of Public Works, Bureau of General Services | 10-3-08 | 10-10-08 |
| Contract awarded and notice to proceed given | — | 10-10-08 |
| ***Pre-Construction Activities*** | | |
| Subcontractor HASP approved | — | 10-21-08 |
| Vector control traps set | 10-24-08 | 10-24-08 |
| Subcontractor plans review and approved | 10-24-08 | 11-3-08 |
| Air-monitoring stations set up | — | 11-5-08 |
| ***Construction Activities*** | | |
| Mobilization, site preparation, material staging area set up, baseline topographic survey conducted | 11-5-08 | 11-7-08 |
| Race St. staging area approved by MDE; tenant property moved to secured storage container | — | 11-7-08 |

TABLE 2-1
Project Milestones

| Milestone | Start Date | Completion Date |
|---|---|---|
| Fencing and vegetation removed from properties and south alleyway; concrete patios saw cut and removed | 11-10-08 | 11-14-08 |
| Patio sub-base and three inches of underlying soil excavated; excavated material staged in roll-off boxes; and pre-and post-excavation surveys performed | 11-10-08 | 11-14-08 |
| Waste characterization of excavated materials conducted; curb footers dug and poured; stone base aggregate, forms for patios, and rebar for patios installed | 11-17-08 | 11-28-08 |
| Concrete steps and pads damaged from settling, sub-base materials, and three inches of soil removed; concrete footers and patios poured | 12-1-08 | 12-12-08 |
| New concrete patios poured | 12-15-08 | 12-19-08 |
| New fencing installed | 12-22-08 | 12-23-08 |
| New steps for three residential properties installed | 2-16-09 | 2-21-09 |
| ***Demobilization Activities*** | | |
| Construction equipment demobilized from site | 12-22-08 | 12-23-08 |
| Wastes characterized and transported offsite for disposal from Race Street site | 2-2-09 | 2-7-09 |
| Tenants' personal property returned | — | 1-5-09 |
| Final Inspection of properties with Tenants | 2-23-09 | 2-27-09 |

All work was completed in compliance with current federal, state, and local regulations and in accordance with standard industry practice. Subcontractors complied with all established requirements for entering and exiting the site and with transportation routes between the McComas Street site and the Race Street site, health and safety, permitting, and work scheduling.

SECTION 3

# Health, Safety, and the Environment

All CH2M HILL and subcontractor employees were responsible for complying with Occupational Safety and Health Administration (OSHA) rules and regulations; Honeywell's health and safety program; CH2M HILL's health, safety, and environment program; and the site-specific HASP. Health and safety contractual concerns included zero incidents, reporting of and learning from near misses, training on first aid, and documentation of any safety incidents.

As described in Section 3.3, dust control measures were implemented during the construction phases of the project and air monitoring was performed continuously while work was being performed. During the two month period when onsite construction work was performed, no elevated dust levels were observed or recorded.

## 3.1 Restricted Access

Appropriate health and safety measures were taken to protect the community and onsite construction workers throughout the construction activities. During construction, the open excavations were demarcated with orange plastic construction barrier fencing to prevent unauthorized entry to construction areas and to ensure public safety. Fencing was installed to a minimum height of 36 inches around the perimeter of the excavated areas using steel posts driven into the ground, spaced at 6-foot intervals to separate pedestrian traffic from work zones. All storage, staging, and lay-down areas at the Race Street site were within the fenced and locked area. During the period of construction at McComas Street, site security was maintained at the Race Street site on a 24-hour-per-day, 7-day-per-week basis where construction equipment was staged and containers storing personal property removed from the seven properties were stored.

Site residents were requested not to enter work zones while the construction activities were being performed. Disposable cover booties and gloves were provided to residents in the event they had to enter the exclusion zone and decontamination materials were provided in the event they encountered contaminated materials. Additional information regarding resident and worker protection is described below and present in the site-specific health and safety plan (Attachment C). No residents entered the work zone while construction activities were being performed.

## 3.2 Personnel Protection

The personal protection hazard assessment performed by CH2M HILL determined that Level D or modified Level D personnel protection equipment (PPE) would be required during onsite construction activities. These PPE requirements were subject to modification based on air-monitoring results or changes to expected site conditions. As elevated dust levels were not observed during the project, the PPE requirements remained unchanged throughout the project.

The following tasks were regulated under OSHA Code 1910.120:

- Performing site preparation activities, including removing overgrown vegetation and preparing staging area;
- Removing existing concrete patios, sub-base material, and common line fence;
- Excavating subsurface soil to a nominal depth of 3 inches beneath the concrete patios and sub-base material;
- Handling material during containerization and characterizing excavated soil and concrete prior to the transport of materials to a licensed, offsite landfill; and
- Backfilling the excavated areas with structural certified clean fill material.

Under specific circumstances, the training and medical-monitoring requirements of federal or state HAZWOPER regulations do not apply to tasks that can be performed without exposing onsite workers to hazards. The non-hazardous tasks that non-HAZWOPER-trained personnel can perform include the following:

- Visiting the site before the start of construction activities to meet with property owners and survey the properties;
- Visiting the site during construction but not entering exclusion zones; and
- Restoring the excavated areas with the installation of new concrete patios and fencing.

## 3.3 Air Monitoring Personnel Protection

An air monitoring program was developed and implemented to minimize and monitor any dust generated during excavation and construction activities. Details regarding dust monitoring are provided in Section 5 of the site-specific HASP, which is provided in Attachment C. During the approximately 2-month period when onsite construction work was performed (November 5 through December 23), no elevated dust levels were recorded. Dust monitoring results are provided in Attachment D.

Potential dust-generating activities involved excavating and removing concrete patios, sub-base material, and 3 inches of soil, respectively. Following site regrading and verification land surveying of the site, certified-clean sub-base gravel was used to fill in the excavated areas on all seven townhouse properties.

The potential for dust generation occurs during soil excavation or other construction activities. Visual observation of the presence of airborne dust by onsite personnel during excavation activities, along with data collected from air monitors, served as the action indicators. Aspect of the dust monitoring and suppression methods used at the site included the following:

- Spraying soils with water to minimize the generation of dust;
- Collecting dust-monitoring data during construction to confirm successful dust control and mitigation and to evaluate on a real-time basis the need to initiate actions to mitigate dust generation;

- Monitoring and documenting airborne particulate levels near the active excavation areas and the north and south property boundaries; and
- Collecting and reviewing dust monitoring data on a real-time basis to measure dust levels.

Throughout the soil excavation and loading activities, monitoring for dust included visual observation and use of two direct-reading "real-time" particulate monitors: a fixed dust monitoring station on the northwest side of the residential properties, along West McComas Street, and a second one in the alleyway on the east side of the townhouse properties, immediately adjacent to excavation areas. The locations of the air-monitoring stations are illustrated in Figure in 3-1.

The particulate air monitors (e.g., DataRAM 4) were equipped with an omni-directional air intake device and a $PM_{10}$ impactor head to monitor dust levels throughout the entire 2-month period when active construction activities were performed. (The $PM_{10}$ monitors measure dust concentrations of particles less than 10 μm in diameter). Both air monitors were operated throughout each workday and were calibrated by the equipment manufacturer before being used at the site. Air monitoring was suspended only during periods of high humidity (e.g., fog and rain), since moisture entering the monitor can damage the unit. Operation of the monitors during humid site conditions can result in slightly higher values being recorded (false positives). These conditions were taken into consideration when the monitoring data are downloaded and reviewed. Table 3-1 presents the action levels for the McComas Street residential remediation project.

TABLE 3-1
Action Levels

| Instrument | Tasks | Action Levels[a] | | Frequency [b] | Calibration |
|---|---|---|---|---|---|
| ***Dust Monitor*** Miniram model PDM-3 or equivalent | Excavation | 0–1 mg/m$^3$ or 0–1,000 ug/m$^3$ | Level D | Continuously throughout remedial excavation activities | Zeroed daily |
| | | > 1 mg/m$^3$ or 0–1,000 ug/m$^3$ | Level C | | |
| ***Noise Level*** [c] Auditory | All | Conversations can be held at a distance of 3 ft without shouting | No action required | Initially and periodically during task | NA |
| | | Conversations cannot be held at a distance of 3 ft without shouting | Hearing protection required | | |

[a] Action levels apply to sustained (3 minutes or longer) breathing-zone measurements above background.
[b] The exact frequency of monitoring depends on field conditions and is to be determined by the Site Coordinator—generally, every 5 to 15 minutes if acceptable, more frequently may be appropriate. Monitoring results should be recorded. Documentation should include instrument and calibration information, time, measurement results, personnel monitored, and place/location where measurement is taken (e.g., "Breathing Zone/MW-3," "at surface/SB-2," etc.).
[c] Noise monitoring shall be used at the discretion of the SC.

No elevated dust levels were detected during the soil excavation or other construction activities performed at the site. Furthermore, no single monitoring results exceeded the action level of 0 to 1 $mg/m^3$ (or 1,000 $\mu g/m^3$). A summary of the air monitoring data compiled from the air monitors are provided in Attachment D.

\\aphrodite\proj\HoneywellInc\RaceStreet\MapFiles\McComas_Street\Figure 3-1 - Air Monitoring Station Locations.mxd

**Legend**

Air Monitoring Locations

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Image Source: Google Earth Pro

Figure 3-1
Air Monitoring Station Locations
McComas Street Site
Baltimore, Maryland

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SECTION 4

# Scope of Work

The site encompasses seven townhouses and their respective backyards, each of which is approximately 35 feet long and 15 feet wide. Before remediation, most of each backyard's ground surface was covered with concrete patios and contained small isolated patches of grass and vegetative matter. The existing concrete patios, supporting sub-base, and a minimum of 3inches of subsurface soil from the backyards of all seven residential properties were removed and replaced in a similar manner.

## 4.1 Overview of Completed Remedial Actions

The major work elements completed to meet the above remedial objective include the following:

- Obtaining permits from the City of Baltimore, including a right-of-way permit for use of the alley south of the properties and a building permit for each of the seven residential properties;
- Preparing project documentation including a site-specific HASP;
- Performing a pre-construction survey with the property owners, including completing a pre-construction property survey checklist, inventorying personal materials in each backyard, and photographing the existing site conditions;
- Performing a baseline topographic survey (to document the seven parcels' existing site boundaries) and pre- and post-excavation surveys using a licensed surveyor;
- Deploying two air-monitoring stations, one to the northwest (FD-1) and the other to the east (FD-2) of the seven residential properties, and collecting the stations' air-monitoring data;
- Performing utility clearance prior to mobilization;
- Implementing vermin control, which involved setting 10 rat bait traps on the south side of the seven residential properties;
- Mobilizing construction equipment and materials and temporary storage containers for property owners' and residents' belongings that were removed from the backyards of each property;
- Obtaining approval from the City of Baltimore and MDE to stage equipment and containers (storing personal property removed from the backyards) on the nearby Race Street site throughout the duration of the project;
- Performing site preparation activities, including removing trees, shrubs, vegetation, fencing, and encumbrances within the backyards of all seven properties;

- Installing stormwater run-on/run-off controls to prevent stormwater from flowing into the work area or from the work area to storm sewers, street gutters, streets, sidewalks, and driveways;
- Demolishing the existing fencing and concrete patios and removing patio sub-base material and soil to a minimum depth of 3 inches from the backyard of each townhouse property while maintaining dust control and monitoring;
- Performing waste characterization of removed materials and coordinating the offsite transport and disposal of the non-hazardous materials;
- Importing certified-clean structural fill material to provide a stable sub-base for the installation of the new concrete patios;
- Installing new 4-inch-thick reinforced concrete curbs and patios, replacement steps at three properties, and new fencing at the perimeter and common fences between the properties;
- Completing minor patching repairs to the concrete stairs and front sidewalks along the north side of the seven properties;
- Performing an initial property survey to record the existing ground topography and performing verification topographic surveys following the excavation of the concrete patio and soil, and a final survey upon completion of the installation of the new four inch thick concrete patios (see Section 4.5.5);
- Inspecting the equipment staging area at the Race Street site and patching the asphalt cover (if required) following the demobilization of construction equipment and roll-off and storage containers;
- Returning personal property to the owners and completing post-construction surveys with the property owners; and
- Completing post-construction surveys and inspections to ensure that the work had been performed to the project specification and met the expectations of the property owners and tenants.

## 4.2 Permitting

Building permits for each residential property and an alley access permit were required for the McComas Street construction activities, as described below.

### 4.2.1 Building Permits

A building permit issued by the City of Baltimore, Department of Housing and Community Development, Division of Construction and Building Inspection, was required for each property before construction activities could begin. Permits were issued to each property's owner. Copies of the permits are provided in Attachment E.

### 4.2.2 Right-of-Way Permit

A right-of-way alley access permit issued by the City of Baltimore, Department of Public Works, Bureau of General Services, was required to allow contractors to block the city-owned alley during various phases of the construction work. The permit was obtained before mobilization to the site. A copy of the permit is provided in Attachment E.

## 4.3 Community Involvement

Honeywell representatives maintained communication and involvement with the West McComas Street property owners/tenants prior to and throughout the construction project. Honeywell or its contractors met with property owners/tenants several times before and during the project to discuss the work scope and schedule, site access, property-specific restoration, safety, and security and to respond to inquiries.

### 4.3.1 Communication with Property Owners

As of July 28, 2008, signed access agreements were obtained from all seven residential properties. Honeywell's representative CH2M HILL, met with the property owners and tenants to outline the work. These meetings were followed by telephone calls, emails, and written correspondence. During the construction activities, CH2M HILL was available onsite, or via cell phone.

CH2M HILL worked with the owners to:

- Obtain permission to perform pre-construction inspections to establish the base-line conditions of each property and obtain photographic documentation;
- Obtain owners' signatures on building permit applications for each property to submit to the City of Baltimore, Department of Housing and Community Development, Division of Construction and Building Inspection;
- Provide information and notification for vermin control and trash removal (documentation provided as Attachment F (on CD));
- Complete preconstruction surveys with the property owners/tenants to identify items in the backyards to be stored at the Race Street site or removed for offsite disposal, and to identify important features on each property such as buried utilities, drains, and sump pumps;
- Review health and safety protocols including dust control and air monitoring methods to be used during onsite construction; and
- Obtain written authorization for a licensed professional surveyor and construction contractors to access the properties to perform the pre-construction survey and construction activities, respectively.

The onsite work began on November 5, 2008. Written or verbal updates were provided to each property owner or tenant at each phase of the construction process including:

- Implementation of vermin controls;

- Start-up of construction activities such as concrete and soil removal;
- Initiation of air monitoring program;
- Backfilling or placement of clean soil sub-base;
- Trash collection for offsite disposal;
- Obtaining consensus on fence type, style, and height was reached with all property owners; and
- Replacement of steps at three of the properties where the steps were in poor condition and their integrity was further compromised from settlement during construction.

### 4.3.2 Pre-Construction Property Surveys

The pre-construction surveys included an initial meeting between CH2M HILL and each property owner to provide information and details on the work to be performed and collect information pertinent to the construction activities including:

- Site access restrictions including notifying property owners/tenants when to restrict access of pets and children to backyard during construction;
- Property-specific restoration requirements including identification of features such as drainage pipes and sump pumps;
- Resident and worker health and safety measures to be implemented during construction such as air monitoring, installation of temporary steps, where needed; and
- Photographs of each property to document the physical condition of vegetation, structures, sidewalks, and pavement prior to the start-up of work.

Once the property owners had time to review the construction information provided during the first meeting, a second meeting was held to provide answers to any questions related to the construction details, and obtain the property owner's signature on the preconstruction checklist survey, which included construction details and the final specifications for fencing.

As part of the pre-construction survey process, a licensed surveyor performed a topographic survey to document boundaries for each of the seven properties. The survey data was used to ensure that the construction work was performed within the boundaries of the seven properties.

### 4.3.3 Post-Construction Review

A post-construction meeting was held to ensure the remediation and renovation of each property was completed to the satisfaction of the property owners. During this meeting, the work was reviewed by Honeywell's contractor and each of the property owners. If needed, a list of action items to be completed in order to close out the project was prepared. Photographs of the completed construction work were obtained to document the post-construction conditions of the seven residential properties. Obtaining final signoff from the property owners or tenants following the renovation of the backyard is in the process of being completed.

## 4.4 Pre-Construction Activities

The following pre-construction activities were performed in addition to the pre-construction survey with the property owners/tenants:

- A site-specific HASP addressing all activities for the residential remedial actions was submitted by ATC to CH2M HILL;
- With prior written notification to the property tenants, vermin control for rodents was performed, including the placement of 10 bait traps near the areas to be disturbed during construction; vermin control is being maintained for a minimum of 3 months following the completion of construction activities;
- Photographs were taken of the backyards of the seven townhouses to verify pre-existing conditions;
- A physical inventory of backyard contents for each of the seven townhouses properties was performed. With the owner/tenant approval, items were either secured in locked storage containers at the Race Street site or placed into roll-off trash containers for offsite disposal; and
- Site preparation activities were performed, including setting up onsite and offsite staging areas for the placement of roll-off boxes and storage containers. A temporary construction fence was installed to secure defined work areas along the south side of the seven properties.

The pre-construction activities also included the preparation of a project-specific quality assurance/quality control (QA/QC) plan.

### 4.4.1 Mobilization

Construction equipment and materials and the property owner/tenant belongings removed from the backyards were securely stored in containers at property located at 2000 Race Street. This staging area was located at the northeast corner of the Race Street site, and included designated areas for roll-off containers, temporary parking for construction equipment, portable sanitary facilities, an aboveground storage tank to store fuel for equipment, and a lay down area for equipment storage.

Prior to mobilizing equipment to the Race Street site, approval was obtained from MDE and the City of Baltimore to use the Race Street site as a staging area for the West McComas Street project. Roll-off containers used for storing owner/tenant personal property were kept onsite, as were containers for storing non-hazardous soil and concrete excavated from the West McComas Street site prior to their being transported offsite for disposal at a permitted landfill site.

### 4.4.2 Site Preparation

The preconstruction survey checklist that was completed and agreed upon with the property owners/tenants prior to the mobilization was used as the basis for determining the extent of site preparation activities. In general, the site preparation included (1) the removal or protection of trees, shrubs, vegetation, fencing, to enable equipment access for the

demolition of the concrete patios and (2) excavation of the underlying sub-base and 3 inches of soil.

Private property such as patio furniture and planters were removed from each property as agreed to with the property owner/tenants for secured storage at the Race Street site, as described above. The stored items were returned to each of the properties at the completion of construction activities.

A general cleanup of existing trash, debris, and vegetation from the backyards of the seven parcels was also performed, and the collected material was placed in roll-off containers for transport to a permitted offsite landfill.

Measures were implemented to protect existing buildings and utilities from construction activities. Open crawl spaces, alcoves, and windows along the backside of buildings were temporarily covered (boarded up) as a barrier to dust and debris during construction, to limit vermin access, and to eliminate surface water intrusion (from dust control or rain events). These temporary structures were removed or left in-place at the completion of the construction activities at the direction of the property owners. Stormwater run-on/run-off controls were also installed to prevent migration of stormwater into the work area or from the work area to storm sewers, street gutters, streets, sidewalks, and driveways.

The property owners/tenants were requested not to use their backyards during the period that construction work was being performed. However, in the event that access to backdoors would be required, temporary access (steps or walkways) was provided during demolition and soil excavation activities.

### 4.4.3 Utility Markout

Utility clearance was performed using the local one-call system (MISS UTILITY) prior to mobilization. The location of subsurface utilities was verified as marked prior to excavation on each property. As required, hand digging was performed to locate a utility line identified by MISS UTILITY within 2 feet of the excavation.

## 4.5 Remedial Action Implementation

### 4.5.1 Demolition

To prepare the site for construction activities, overgrown vegetation on the properties was removed followed by the demolition of the existing fences and removal of the existing concrete patios (nominal dimensions of 35 feet deep by 15 feet wide by 4 inches thick). The curbs along the southern boundary of the properties were also removed.

Controlled demolition techniques were employed during the removal of the patios and concrete curbs. To minimize vibration, which could damage existing building structures, non-vibratory removal techniques were used to cut concrete patio slabs against the walls, stairs, or existing air conditioning units. Saw cutting of the concrete was performed around the existing air conditioning units at units 203 and 205.

A fine water mist was applied to minimize fugitive dust generated during the demolition activities. Demolition materials were segregated and placed into designated roll-off boxes stored at the Race Street site.

### 4.5.2 Excavation

A mini-excavator or picks and shovels were used to excavate soil, depending on the accessibility, which was determined on a property-specific basis. At some locations, the width was limited, and conventional excavation construction equipment could not be used.

The excavation was limited to the areas within the property boundaries and to soil beneath the concrete patios. In order to prepare an adequate sub-base for the replacement patios, an average of 3 to 7 inches of patio sub-base soil was excavated across all properties after the removal of the concrete patios. The excavations were dug parallel or adjacent to structures while maintaining a nominal 45° (1:1) slope from grade to specified depth of excavation. A water spray was applied to suppress and minimize dust and airborne dirt.

Approximately 84 tons of contaminated soil and 41 tons of concrete were generated from the demolition and excavation activities. Excavated soils and materials, including refuse and broken concrete, were placed into roll-off containers, which were removed from the site and stored at the Race Street site while arrangements for offsite disposal were being made.

### 4.5.3 Transportation and Disposal

Soil was removed from excavation equipment and related vehicles before they were removed from the site, and daily street and alley cleaning was performed, as required, to minimize soil tracking onto public roads and to maintain a clean work area.

Excavated soil removed from the seven residential properties was placed into designated roll-off boxes. Construction debris and yard waste from the general site cleanup was containerized separately from excavated soil for offsite disposal. Waste characterization sampling and analysis was performed for the containerized soil and concrete debris to complete waste profiles and obtain approval for the offsite transport and disposal of the materials. Characterization of the excavated materials determined that these materials were non-hazardous. The waste characterization data are provided in Attachment G.

A commercially licensed transporter trucked the roll-off containers to Republic Services Modern Landfill, in York, PA. The roll-off containers were equipped with tarps to containerize the material during transport. Waste transport documentation is provided in Attachment H.

### 4.5.4 Backfilling/Compaction

Imported structural fill material was used to provide a stable sub-base for the installation of new concrete patios. Certified clean Crusher Run 6 (CR-6) was used as structural fill. The structural fill material was placed at various depths (averaging approximately 4 inches thick) up to the depth of the proposed bottom of the new concrete patio. Structural fill was compacted with a walk-behind vibratory plate compactor to prevent differential settlement, sinkholes, or subsidence. Documentation of the certified clean crusher run material is provided in Attachment I.

### 4.5.5 Site Surveying

Site surveys were performed by a Maryland certified surveyor to document site conditions at four distinct points of the project:

- Before demolition and excavation activities, the dimensions and boundaries of each property were confirmed (Figure J-1 Existing Ground Topography in Attachment J);
- Following the demolition and removal of the concrete patios and sub-base material, the elevation of the underlying soils was documented (Figure J-2 - Ground Surface After Concrete Removal in Attachment J);
- Following excavation of 3 inches of subsurface soils, the base of the excavation was determined (Figure J-3 – Ground Surface After Soil Removal in Attachment J);
- Following the completion of the restoration activities, a final topographic survey was performed (Figure J-4 - Final As-Built Site Elevation in Attachment J).

The survey results document that a minimum of 3 inches of subsurface soil were removed from the site. Copies of the topographic survey site plans are provided in Attachment J.

### 4.5.6 Restoration

Restoration activities performed were property-specific and based on the pre-existing conditions documented during the pre-construction survey held with the property owners/tenants. In general, site restoration included the following:

- Installing 4-inch-thick concrete patios reinforced with 4 gauge welder wire mesh and finished with an architectural finish in accordance with the specifications and engineering drawings presented in Attachment K**;**
- Installing approximately 280 linear feet of 6-foot-high, polyvinyl chloride privacy fencing along the perimeter of the properties as well as along the common fence line for each property, and seven 3-foot-wide, 6-foot-high access gates equipped with locking mechanisms at each property;
- Sealing and/or repairing cracks in the sidewalk along the front (north side) of the seven townhouse properties;
- Sealing and/or repairing cracks in the concrete steps at the back entrances to the four townhouses whose steps were not replaced; and
- Replacing (because of their poor condition) the steps leading to the back door entrances of three properties with free-standing, high-quality, pressure-treated wood decking installed with a landing, wood railing, and handrails at two residences (203 and 205) and the installation of reinforced concrete steps at one residence (209).

### 4.5.7 Demobilization

After the completion of all construction activities and punch list items, field equipment, temporary facilities, and all other items brought onsite for the remedial action implementation were removed. Street, sidewalks, and common areas used during the work were cleaned so that no residual soil or dust from the construction work remained at the site.

An inspection of the equipment and material staging area on the Race Street site was performed to ensure that the engineered cap was not damaged. Several small divots in the asphalt surface were repaired.

Post-construction meetings with the property owners/tenants are being held following the completion of punch list items that were identified during the initial post-construction meeting. Honeywell is in the process of obtaining signatures from the property owners documenting that the work has been completed to their satisfaction.

SECTION 5

# Conclusions and Recommendations

This RACR documents the response activities completed at the West McComas Street site pursuant to a directive issued by MDE to Honeywell on June 11, 2007, to remove soil to no less than a depth of 3 inches. The completed work was undertaken pursuant to the 2007 work plan outlining the remedial actions to be performed at the site. With submittal of this completion report, Honeywell has completed all of the requirements of the MDE directive.